The Taunton Bay Study
Governance Committee Review of Bay Management Models

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This summarizes some of the governance committee's research into bay management models. This work began with a literature review of dozens of examples of bay management from around the U.S. and world (the concept of "bay management" is, in our view, variously referred to as integrated coastal management, ecosystem-based management, marine or ocean planning, etc.). Several more narrowly focused marine industry-based entities were also reviewed as well, such as the Stonington Fisheries Alliance and Maine's Seaweed Council. The summary of this research is brief and incomplete, and should be expanded upon when moving to a more detailed phases of bay management planning.

This review yielded a set of observations of some of the "classic elements" of successful bay management. The review also contributed to a draft set of bay management principles for the Taunton Bay Study that were later refined into the current set of principles. Then, as we began to reach some conclusions as a result of the work of the various study committees, several of these models were identified for closer review in order to gain a greater understanding of how we might further develop the conceptual ideas we had for a governance structure that could work for Taunton Bay. Some of the specific questions we sought to answer in this later phase of review are as follows: (1) what aspects of these models would be appropriate, or workable, for the Taunton Bay governance structure; (2) what aspects would be inappropriate; (3) who should be represented in any planning or management body; (4) what do these models have to say about an integrated governance structure, (5) what tools are used for gathering data and information, and; (6) what tools are used to resolve user conflicts?

Classic Elements of Coastal Management

The literature describing modern coastal management programs contains some "classic" elements that are part of nearly all coastal management planning structures. These common elements are repeatedly identified as central to the management systems; they are what make them function effectively.

During the early stages of the Taunton Bay Study the governance working group discussed a 2004 draft paper containing and research findings from CLF intern Ellen Simmons. This draft paper identified the first five classic elements of bay management noted above: 1) adaptive management, 2) interdisciplinary integration, 3) community-based initiatives and capacity building, 4) proactive management, and 5) ecosystem based management. These classic elements been supported in subsequent research and two additional elements have been identified as additional research and review of Ellen's draft paper show the importance of 6) a long term vision and perspective and 7) ecological reserves as important to bay management efforts.

Adaptive

One of the central components of all coastal management regimes that emerged is adaptive management. Adaptive management provides coastal management plans with the ability to learn from experience. Most coastal management systems have a built in review phase for their management plans. Under this provision, there is at least a time-based (yearly, biyearly, etc.) review phase that allows for incorporation what has been working and what has not within the plan's management structure. Additionally, many

management plans use adaptive management as a way to infuse flexibility into the plan's regulatory structure; these plans use adaptive management as a "daily" management tool that allows for the incorporation of information and adaptation as necessary.

Integrated and Interdisciplinary

Coastal management plans and studies indicate that those that are most successful generally contain a provision that encourages and provides for integrated and interdisciplinary management structures. Through integration all those with an interest in the resource including governmental bodies, interest groups, stakeholders, and the general public are brought into the management process. This is done in two ways. Governmental agencies that are involved in some aspect of coastal management are unified under one procedure for managing and overseeing coastal issues, conflict, and management. Additionally, governing bodies are set up that allow for all those with a stake or interest in the coastal area are brought into the management process and governance and given a say through this mechanism. Also brings together all uses rather tan individual sectors. Equally as important in the long term is integration and an interdisciplinary approach on a resource basis as well (across media). This is not to say that planning efforts should be delayed until fully integrated.

The interdisciplinary component of management is seen in the broad spectrum of individuals that are brought into the management process and given an opportunity for input. This is best illustrated by the presence of scientist in the management process, whose input is vital to the characterization and structure of management regimes.

Community-based Initiatives and Capacity Building

Another key element that is found in the great majority of coastal management plans is the element of community involvement. In order for plans to have a greater chance of success, it seems that community involvement is a vital component for inclusion. Many plans have community out-reach and education programs that stimulate and expands community participation and acceptance of programs. Additionally, local communities have local knowledge and are a key resource in the management process. Also, involvement of local communities in the management process is a key factor in community acceptance of the initiatives. This can be illustrated by the success of bottom-up approaches to management of costal resources in management structures all around the world.

One additional benefit of this management technique is that it allows for capacity building. Through involving local interests and knowledge, concerns are prioritized easier and local concerns are heard and dealt with in a way that builds the local community's capacity for further plan expansion and evolution.

Proactive Issue Management

Another key element to successful management plans is the incorporation of proactive measures. Historically, coastal issues have been dealt with retroactively, meaning that after problems, such as user conflicts, arise they are dealt with. However, by incorporating a proactive element into management structures, problems can be dealt with before they occur. Some plans have done this by naming the major issues that face their coastal areas and then devise specific plans and objectives to deal with the issues over a specific time period (such as fifteen years). After that time period is up, the issues and plans will be reviewed for effectiveness and an additional attempt to locate new issues will take place. Through this process managerial protocol is in place to deal with issues or conflict before and actual problem has erupted.

Ecosystem-based Management

Ecosystem-based management techniques have also been incorporated into a lot of coastal management plans. Through this mechanism, scientific and other relevant material pertaining to specific ecosystems is incorporated into the management schemes to deal with unique ecosystem components. This allows for tailored management plans that incorporate scientific information. Additional, this technique allows for the incorporation of future scientific information that is discovered as the management process is in full swing to help better direct, focus, and adapt the plans for area specific issues.

Long Term Perspective and Vision

Most literature explicitly recommends taking a long term perspective and development of a vision for the management area when undertaking bay management planning.

Ecological Reserves

The literature around effective bay management planning also recognizes the need to set aside ecologically sensitive habitat and, or areas to protect biodiversity in order to help ensure a healthy, sustainable ecosystem.

Review of Bay Management Models Emphasizing Governance Structural Components Viewed as Useful in Development of the Taunton Bay Study

Ellen Simmons also assembled a three and one-half inch binder with many of the documents found through her research. This and additional research material was also copied to a compact disk. Some members of the Governance Committee reviewed this raw research in addition to the classic elements paper. Thus began the project's crash course in coastal management, which set us thinking about ways to improve use management in our region by incorporating sound local information into the decision-making process. Particularly striking were management efforts in Australia that nested several levels of management—local, regional, state—within a single coherent system, the different levels united in assuming a shared advocacy for the coast. What follows is a more detailed summary of the coastal management models we have considered.

(1) Australia

Australia's Ocean Policy and Marine Bioregional Planning
(http://www.oceans.gov.au/MBP.jsp)
Overview

Ausralia's Oceans Policy sets "the framework for integrated and ecosystem-based planning and management for all Australia's marine jurisdictions." It nests several levels of management—local, regional, state—within a single coherent system with the different levels assuming a shared advocacy for the coast. Australia's world-leading program of regional marine planning has been brought directly under federal environment law (*Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) to provide a clearer focus on conservation and sustainable management of the marine environment and offer greater certainty for industry.

Under the new approach, regional marine plans will be established under section 176 of the EPBC Act, acting as a key document to guide the Minister, sectoral managers and industry about the key conservation issues and priorities in each marine region. The initiative will see Marine Bioregional Plans, including a system of marine protected areas (MPAs), established over Australia's 14 million square kilometre ocean jurisdiction.

The plans will draw on Australia's growing marine science and socio-economic information base to provide a detailed picture of each marine region. Each plan will describe a region's key habitats, plants and animals; natural processes; human uses and benefits; and threats to the long-term ecological sustainability of the region. The plans will give details about the various statutory obligations under the EPBC Act that apply in any region, and will describe Government's range of conservation meausres in place, such as those relating to recovery planning for threatened species.

Interesting Governance Structural Components

- At the core of the policy is regional marine planning.
- A vision of "Healthy oceans; cared for, understood and used wisely for the benefit of all, now and in the future."
- Adaptive management is used to effect conservation, use and management of its coastal waterways. Adaptive management is defined as 'a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs.'" The adaptive system focuses on increasing the understanding of ecosystems as a

whole through active participation and learning, involving experimentation, reviewing and responding. The adaptive management process can thus be a valuable tool in assisting decision makers when integrated knowledge is required for certain coastal actions.

- Promoting a systematic framework for linking participatory processes, tools and planning approaches to achieve community and government partnerships, coordinated management and monitoring, and effective investments.
- Focus on providing certainty for industry.
- Focus on providing environmental outcomes rather than on how activities are undertaken.

Potential Weaknesses

- This sets important policy and legal framework at nationwide level for regional management – is not a specific example of bay-management.
- Focus on federal waters – will need to be integrated with state plans.

Victorian Coastal Strategy (http://www.vcc.vic.gov.au/)

Overview

Under the Coastal Management Act of 1995 the Victorian Coastal Council has prepared the Victorian Coastal Strategy (VCS). The VCS establishes the framework for the long term sustainable management of coastal and marine areas in Victoria, Australia.

Interesting Governance Structural Components

- Regional Boards→Coastal Action Plans
- Under the Act the Council has the following functions:

    - To undertake statewide strategic coastal planning
    - To prepare and submit to the Minister a draft Victorian Coastal Strategy
    - To provide advice to the Minister
    - To facilitate the operation of Regional Coastal Boards
    - To monitor the development of Coastal Action Plans
    - To coordinate the implementation of the Victorian Coastal Strategy and Coastal Action Plans
    - To prepare and publish guidelines for the planning and management of the coast
    - To liaise with and encourage the cooperation of Government departments, public authorities, municipal councils, industry, community groups and persons and bodies involved in the planning, management and use of the coast in furthering the objectives of the Act
    - To provide opportunities for the public and interested groups to be informed of and involved in the work of the Council
    - To encourage the work of volunteers in using and conserving coastal resources
    - To give consideration to the needs of Aborigines and other interested groups in relation to the coast.

- Coastal Action Plans (CAPs) identify strategic directions and objectives for use and development in a region.
- They provide for detailed planning of the region or part of the region to facilitate recreational use and tourism, and to provide for protection and enhancement of significant features of the region's coast, including the marine environment.

    - Examples of Regional/Subregional/Sectoral structure:

- **Gippsland Region**
  - Estuaries Coastal Action Plan
  - Gippsland Lakes Coastal Action Plan
  - Gippsland Boating Coastal Action Plan
  - Integrated Coastal Planning for Gippsland Coastal Action Plan
- **Western Region**
  - Anglesea Coastal Action Plan
  - Lorne Coastal Action Plan
  - Moyne Coastal Action Plan
  - Skenes Creek to Marengo Coastal Action Plan
  - Warrnambool Coastal Action Plan
  - South West Estuaries Coastal Action Plan
  - South West Victoria Regional Coastal Action Plan
  - Glenelg Coastal Action Plan
  - Central South West Regional Coastal Action Plan
  - Central South West Estuaries Coastal Action Plan

Southeast Regional Marine Plan (http://www.oceans.gov.au/se_draft_plan.jsp)
Overview
First region implementing Autralia's ocean policy and regional marine planning.

Interesting Governance Structural Components

- Billed as a unique system of ocean planning and management pioneered by the Howard Government in *Australia's Oceans Policy*.
- Recognizes the need for management of each of these activities and the ocean resources as a whole, rather than a set of competing sectoral interests.
- Integrated approach to marine planing - bringing together under the same management framework all the uses in the region from aquaculture and commercial fisheries to petroleum, shipping, tourism and recreation, surveillance through to marine research and conservation.
- Integrated Oceans Management is defined as the management of each of these activities and our ocean resources as a whole, rather than a set of competing sectoral interests.
- Through this approach aims to overcome what has been called the 'tyranny of small decisions' that lead to incremental degradation through the negative effects of many small decisions that seem on their own, inconsequential.

New South Wales Total Catchment Management (http://www.cma.nsw.gov.au/)

Overview
The first effort by a state in Australia to manage on a catchment (watershed) basis, recognizing the impacts from catchments on coastal zones and the marine environment. Thirteen Catchment Management Authorities (CMAs) have been established across the State by the New South Wales Government to ensure that regional communities have a significant say in how natural resources are managed in their catchments.

The CMAs are locally driven organizations with a board that reports directly to the NSW Minister for Natural Resources. These statutory bodies, established under the Catchment Management Authorities Act 2003 (CMA Act), coordinate natural resource management (NRM) in each catchment. They are responsible for involving regional communities in management of the NRM issues facing their region, and are the primary means for the delivery of funding from

the NSW and Commonwealth Governments to help land managers improve and restore the natural resources of the State.

Each CMA board consists of a chairperson and up to six board members, who together provide a range of experience, skills and knowledge in areas such as primary production, cultural heritage, biodiversity conservation, business administration and governance. Each CMA also has a general manager and a small team of professional staff.

The CMAs work in partnership with the community, local government, State Government agencies, industry and individuals.

Interesting Governance Structural Components

- Management on a catchment (watershed) basis
- Blueprints (plans) cover a wide range of natural resource management issues from biodiversity and water quality to management incentives and community involvement/capacity.
- The integration of information is a key element to planning because it can identify planning problems, knowledge gaps, develops communication between scientists, government and stakeholders.[1]
- Tiering – Uplands →Transiitonal Zone → Coastal Waters (3 miles)
- Transboundary Coordination →linkages b/w catchments

[1] From Adaptive Management Framework for Catchment and Coastal Management and Decision Making by John Bennett and Paul Lawrence.

(2) Maine

Northwest Atlantic Marine Alliance

Overview

Formed in 1995, largely in response to New England's fisheries crisis, by people who believed there had to be a better way to manage marine resource use. Based on an alternative decentralized governance model (the VISA model). Those involved with NAMA believe that the way we currently manage fisheries and other marine resources is failing, and that the current system is incapable of delivering and sustaining a healthy and diverse abundance of marine life and human uses. "If the marine environment and the businesses that depend on it are to remain healthy, we need a new management system--one that will grant our children and grandchildren the opportunity to work on and enjoy the sea."

Interesting Governance Structural Components

- NAMA is comprised of many smaller parts (Community Alliances) linked together in complex and unpredictable ways, like a web or network.
- Both individuals and institutions can become NAMA members. Individuals can come together to form a Community Alliance which then has a vote in all NAMA affairs that affect members of that alliance.
- Over time, individual Community Alliances may find they are focused on similar issues that are better addressed by collaborating. This is the source of NAMA's power — that we are greater than the sum of our parts.
- NAMA's Board of Trustees is composed of representatives of all the members and community alliances and makes only those decisions that affect the entire network.
- Potential benefits, might include access to: 1) funds and financial services for businesses, programs, or products that further NAMA's purpose and principles; 2) data, statistics, references, studies, contacts, prices, new ideas and other relevant information; and 3) methods of decision-making that will increase the adaptability, effectiveness, and productivity of all parts of NAMA.
- NAMA provides a mechanism for participants to develop, collectively, the framework for an entirely new kind of institution that will enable its members to produce these sorts of benefits.
- Such a framework would operate in accordance with fundamental governance principles that reflect today's social, economic, and ecological realities. These principles are designed to ensure that responsibility and authority for making decisions about conflicts, opportunities, or other issues are be exercised fairly and effectively at the most local level possible — the level that involves all relevant and affected parties.
- Strong reliance on a clear purpose for the organization and a set of fundamental governance principles to guide all NAMA activities. These principles are characterized as "like NAMA's Bill of Rights or Ten Commandments."
- Decisions made by NAMA members, whether in a community alliance or at the NAMA Board of Trustees, are binding only to NAMA members. The only way non-members can be bound is if someone with authority over their activities (such as a part of government or their employer) adopts and enforces the same decision NAMA makes. Nama decisions can differ from the government's, so long as they do not violate federal, state, or local law. Otherwise, NAMA members can make decisions that bind NAMA members to anything they want that is in accordance with NAMA's purpose, principles, and bylaws.
- As more people become members, NAMA will become a more powerful force to influence changes in laws, policies, and government practices.

Potential Weaknesses

- Formed as a result of New England's fisheries crisis, is predominantly focuses on issues fisheries-related issues and has not ventured much beyond this sector focus.
- Interesting organizational structure with smaller community alliances within larger alliance, but is not organized to actually management a resource (instead designed to promotes development of such a framework)

Maine's Lobster Zone Management Councils

Overview

Area management within the lobster fishery that has shown promise and is viewed by many as a success. In this fishery, efforts are made to incorporate the fishing industry actively in the development of "lobster management zones" and community-based "zone management councils" along the coast. The effect of this effort, which has not been easy or quick, is to generate "buy-in" for the management rules, producing high levels of self-management and compliance with regulations. While all of the goals relating to overall catch levels and trap number reduction have not been achieved completely, the response among industry participants is open and positive to the local councils' innovations in management.

Interesting Governance Structural Components

- Area Based with Regions (zones) and community based zone management councils
- Has sub-regional structure with Lobster Harbor Territories and Lobster Zone Districts
- Involves participants in management to create buy-in and as a result compliance

Potential Weaknesses

- Single sector
- Limited purpose

Stonington Fisheries Alliance

Grew out of fisheries crisis and is working for responsible fishing that involves and benefits the community. SFA is a community-based organization whose purpose is to promote responsible local fishery management through education, advocacy and scientific inquiry, directed by a set of ecological and participatory principles in all its activities. Encourages adherence to principles and stewardship through local responsibility for management. Many of the principles and concepts incorporated into the SFA program are discussed at greater length in a paper by Robin Alden and Anne Hayden. "Reforming Fisheries Management in Maine: A Report Prepared for the Maine Department of Marine Resources." January, 2003.

Interesting Governance Structural Components

- Community-based and open to all with expertise or interest
- Focus on education, science and ecological health
- Builds capacity through participation in projects such as resource enhancement, improving marine science and trades education, data collection, and policy recommendations.
- Operates according to established set of principles (management and operative).
- Promotes management at most local scale possible

Potential Weaknesses

- Focused on fisheries sector
- Not organized as an area management model (instead designed to promote such organization)

Casco Baykeeper/Casco Bay Plan

Overview

The Casco baykeeper is one of the nation's first baykeepers and grew out of efforts by the Friends of Casco Bay to protect the water quality of Casco Bay. Ten to fifteen years ago, the Casco Bay Estuary Project undertook a cooperative effort to protect and prevent the pollution of Casco Bay by involving concerned citizens and local, state, and federal governments. Based on recognition of the interconnections within each watershed, lead to a new approach in environmental management and land use planning. While the environmental health of the bay has improved since passage of the CWA, specific problems relating to conflicting human use, pollution (including toxics), and habitat loss remain, which prompted public concern about the overall health of the bay in the l980s.

Interesting Governance Structural Components

- Friends of Casco Bay, Baykeeper:
  Friends of Casco Bay is a grassroots organization that works to improve and protect the bay's environmental health by taking a cooperative approach to solving pollution problems and by creating a strong association with bay businesses, marine entities, and regulatory agencies. Friends of Casco Bay has implemented a water quality monitoring program and operates projects involving marine debris collection, oil recycling, mobile pumpout programs, and clam flat restoration.
- Baykeeper is a focal point for monitoring bay and liason with outside entities.

- Casco Bay Plan:
- Draft plan incorporates a "watershed" view rather than focusing on local towns or individual species.
- Efforts are now made to sustain the health of the whole ecosystem..
- Through selection of Casco Bay as an estuary of national significance by the U.S. EPA, Maine received federal support under Section 320 of the Water Quality Act of l987 to study the state of the bay, assess the impact of human activities, and determine the actions needed to improve its health.
- Developed draft plan through a collaborative process involving hundreds of individuals and dozens of organizations and government agencies based on scientific studies, public feedback, local government input, and countless meetings and discussions.
- Developed a vision for a generally healthy bay.
- Views developing new solutions as the heart of this plan.
- Actions to protect the bay are presented in five areas: monitoring, public education, technical assistance, regulation, and planning.
- The draft plan recommended that an Office of Casco Bay and an Implementation Committee be created (to succeed the Casco Bay Estuary Project). The Office of Casco Bay would have minimal staff but would provide a strong coordinating role, collaborating with groups and individuals. The Implementation Committee would act as a catalyst to make sure actions occur. Recommended committee included 17 representatives including the heads of all ME resource agencies, their federal agency counterparts, local government officials, and the Baykeeper. Some parties would be involved on an ongoing basis, while others may work only on specific issues.
- Upon approval of the Casco Bay Plan, the Governor of Maine would appoint, by Executive Order, a Casco Bay Implementation Committee to perform the following functions:
  - Oversee implementation of the Casco Bay Plan.
  - Provide a permanent forum for ongoing policy discussion concerning the bay.
  - Revise the Casco Bay Plan based on new scientific findings, technological advances, or changes in economic conditions.

- Coordinate actions involving multiple agencies and organizations.
- Ensure that the public participates in guiding implementation of the plan (and any proposed changes).
- Authorize and make appointments to advisory committees as necessary.
- Oversee project staff.

Potential Weaknesses

- Focus limited primarily to pollution/water quality
- Large and potentially unwieldy implementing committee

Georges River Clam Management Program

Overview

Fishermen and their communities are given legal authority to be the primary managers of the fishery and the community writes the rules. The community provides checks and balances to prevent the abuse of power, and the government provides revocable permission, oversight, and technical assistance. The concept theory is that responsibility fosters stewardship.

Interesting Structural Components

- Controlled entry
- Efforts to incorporate all available sources of information
- An ecosystem component (estuary, bay, gulf)
- A defined management area
- A well defined community (geographic/residency, resource, interest, traditional use).

Potential Weaknesses

- Single sector
- Single Community

Additional Maine Examples Reviewed and Discussed

Maine Seaweed Council

Penobscot East Resource Center (http://www.penobscoteast.org/)

(3) United States (Other than Maine)

U.S. Forest Management

One interesting discussion of the concepts we associate with Bay Management can be found by looking ashore in a paper by Gibson, Clark C., E. Ostrom, and M. A. McKean. *People and Forests: Communities, Institutions, and Governance.* Cambridge, The MIT Press, 2000. pp. 227-242.

US Coastal Zone Management Act & Special Area Management Plans

Many U.S. states, including California noted above, have granted coastal planning authority to coastal municipalities in their Coastal Zone Management programs. More information on U.S. CZM in practice is available by reviewing different states' CZM plans at: www.ocrm.nos.noaa.gov/czm.

California

Two examples of incentives used in coastal management programs are found as part of the California Coastal Commission's Local Coastal Programs initiative, available at www.coastal.ca.gov/web/lcps.html. One incentive is that local governments are given funds and technical assistance if the prepare and implement local plans. A second incentive used in California's program is to grant local governments permit power over its coastal area if its local plan is approved by California's Coastal Commission. The SF Bay plan is available at www.bcdc.ca.gov/library/bayplan/bayplan.htm.

Chesapeake Bay

Overview

Add discussion of managing water quality according to different zones, similar to habitat area-based management concept proposed for Taunton Bay. Also may serve as an example of a stakeholder driven bay-management plan.

Rhode Island (SAMPS)

(4) Ecuador[2]

Coastal management in Ecuador is a national effort. The lead agency of the program is the office of the President. For management, the coastal region has been divided into five Zonas Especiales de Manejo (Special Management Zones). **The plan focuses on finding a balance between development and conservation with a strong emphasis on community involvement and responsibility.** Additionally, management practices have been customized to the unique attributes of coastal Ecuador. Ecuador is faced with conflicts between the growing, unplanned industrial development of the coast and the need for conservation of existing coastal ecosystems. This program is an attempt to quell this competition. There are some major factors identified as major contributing factors to current problems running in abundance along Ecuador's coast. Among these factors are a lack of clear property rights, ineffective management regimes, and the decay of coastal fisheries and terrain.

Ecuador's overall management structure has taken **a decentralized and adaptive approach to management**. Ecuador's program calls for an "incremental, overtly experimental approach to coastal management- one that works to test new management practices at a small scale before applying them more broadly. Program addresses priorities for both development and conservation in geographic sites selected as pilots for the application of management techniques that emphasize initiatives and responsibility at the community level." Once techniques are proven effective, they will be tried in other areas along the coast.

Ecuador's Lessons Learned:

- Located instability in leadership and changes to program design
- ZEM committees have emerged as governance mechanisms
  Specific ZEM plans have been essential to the program
- The program's experimental and participatory approach to coastal management is the program's greatest strength.
- Found that an "overtly experimental approach to coastal management is appropriate in a situation where resource management issues are complex and traditional sector-by sector, top-down approaches have historically produced meager results.
- Program's "rolling design" of selecting annual activities after a self-assessment of the previous year's allows a work plan based on the accumulated experience from management.
- Experimental approach provides valuable experience and new management practices.
- Initiatives that are too big for the capacity of the implementing institution

The implementation phase of the PMRC is planned out incrementally. The key issues that are addressed in the management area include: mangrove conservation, nearshore fisheries, "inappropriate" shorefront development, coastal dependent developments, and water quality. **All of these issues interact in the coastal area and require a cross-sectoral approach to management.** The program's long-term strategy involves determining the most effective methods for changing traditional behavior in pilot areas through experimentation and then "replicating these approaches coast-wide." The real successes of the program are seen in the impact on local behavior and organized enforcement.

Ecuador's experimentation with coastal management began in 1985, when USAID selected the country as the location of one of three pilot project to test the usefulness of applying lessons learned

[2] Ecuador's Programa de Manejo de Recursos Costeros (PMRC), is discussed in an evaluation by the University of Rhode Island's Costal Resource Center entitled *Ecuador's Pioneering Initiative in Integrated Coastal Management*, 2000. The program was funded by the Inter-American Development Bank, whose restrictive funding limited the flexibility and effectiveness of the program. (which was identified as an extraneous outside factor on the project).

form coastal management initiatives in the United States to similar problems and opportunities in developing countries. This project continued until 1993. In 1993, Ecuador took over the program. The plan is **an adaptive learning-based approach** that is organized around sets of strategies for each of the major coastal management issues. The five areas have a set of two to five management strategies. One example of a management strategy is to manage mangrove areas. In fact, since the implementation of the management plan, mangrove destruction within ZEMs has virtually ceased. Since the late 1980s techniques and alternatives to destructive practices have been encouraged to sustain human activities in mangroves. One strategy makes this happen through public awareness, school programs, public out reach, and education initiatives. A second strategy is to apprehend those that destroy mangroves; this is the top priority of UVCs. The most noticeable success in mangrove management is in developing management techniques that promote stewardship and sustainable use practices among traditional mangrove users and costal communities. This has resulted in the replanting of mangroves, the re-establishment of water circulation in abandoned shrimp farms, and modifying fishing practices to protect undersized shellfish. Additionally, 700 hectares of mangroves have been replanted and ecotourism initiatives have been funded, including building information centers and trail in the mangroves. Another management strategy has formed around Ecuador's fishing industry, particularly overfishing and habitat destruction. Thus, actions have been taken to improve onshore facilities in support of artisianal fishing, gather information, and develop new push net is less damaging to shrimp and reduces by-catch. Additionally, the shrimp mariculture industry is noted as an area where an integrated approach to management is needed. The industry needs to be able to rely on a larger coordination effort if conflicts with competing coastal activities and declines in ecosystem qualities are to be addressed successfully.

A key feature of the program is that management takes place at both the central government and community level. This is referred to as a two-track or co-management approach. Additionally, the management program has focused intensely on resolving management issues in the five mainland ZEMs (Special Management Zone) and coordinating actions among national agencies with costal responsibility. Also, a Ranger Corps provided by the Unidades de Conservacion y Vilgilancia (UCVs), draws together local level governmental administrative and enforcement officers. UVCs conduct joint patrols, collaborate on enforcement and permit-granting actions, and work together to monitor changes in the condition and use of the coast's resources. Today there are seven UVCs along the mainland coast led by a port captain of the Marina Mercante, Ecuador's equivalent of the Coast Guard.

Ways for Ecuador to Improve:

- strengthening mechanism that will enable foster management strategies on a place-by-place basis and tailors them to the local management capacity and local priorities.
- coastal municipalities, ZEM committees, NGOs and other private sector groups should be invited to apply for funds to carry out specified types of activities.
- micro-business loan program directed at in areas in particular need.
- form a discussion forum for policy setting on costal topics of national significance
- pool experiences and discuss collaborative action in communities
- Hold annual workshops and reciprocal site visits among ZEMs
- Simplify enforcement procedures for greater emphasis on conflict resolution

After two years of examining institutional structures and a series of public meetings, Ecuador defined what it feels are the best features for an administrative structure. The government noted that there are no problems common to all coastal areas. Ecuador noted that there are specific problems particular to coastal areas. Thus, in identifiable areas there are serious conflicts among users, which will continue to worsen and proliferate if no action is taken by the government to manage these conflicts. Additionally, overlapping areas of jurisdiction in government need to be better coordination, along with enforcement of existing legislation.

Ecuador also drafts **annual work plan based upon self-assessments of current plans** that examine the progress and deficiencies in each element of the programs. There is also discussion of lessons learned and priorities set for the next year's working plan.

New forms of governance have also arisen that are unique to Ecuador. Such an example is the notion of "stewardship contracts," through which groups of traditional mangrove users assumed responsibility managing those specific areas.

Each of the ZEM (Special Management Areas) has an executive committee composed of local-level governmental functionaries, including municipal officials. There is also an Advisory Committee appointed by the office of the President. Appointments to the committee resulted from a public opinion survey to identify individuals respected in the private sector. The aim was also to get a group that represented different user groups and private sector interests in each or the particular ZEMs. There was some change in the initial vision of how the committees would function. It was thought that executive committee would debate and approve each element of a ZEM plan, however, the advisary meetings were attended by a hundred or more people and such debates ended up taking place there.

Tanzania recognizes Ecuador as a leader in coastal management. Tanzania notes that Ecuador has instituted citizen's rights and responsibilities for mangrove use through negotiated user agreements. The successes in Ecuador were also attributed to the Ranger Corp and the seven port captains' field involvement

(5) U.N. Food and Agriculture Organization's (FAO) Integrated Coastal Area Management (ICAM) Model

Discussion of paper: FAO. *Integrated coastal area management* and *agriculture, forestry and fisheries: FAO Guidelines*. Food and Agriculture Organization of the United Nations. Rome, 1998. Available at: http://www.fao.org/docrep/W8440E/W8440e00.htm#TopOfPage

(6) East African Initiative[3] (Tanzania)

With South Africa and Tanzania in forefront, the east African nations have been experimenting with integrated coastal management since the late 1980s with the signing of the Arusha Resolution on Integrated Management in 1993. There have been five programs in East Africa of particular success in 1998 and 1999. These programs span throughout Kenya, Tanzania, and Mozambique. These initiatives focus on adaptive, or learning-based, management. These plans emphasize three particular management techniques: the adjustment of actions and strategies as new information was obtained, learning by doing and experimentation, and active participation by relevant actors.

Project adjustments involve either single or double loop learning; single loop learning being the adjustment based on updated information or other learning strategies, double loop being the adjustment of overall theory failures. Learning by doing involves hands on experiences from which results are used and incorporated into the management process. There is also a participatory process that engages stakeholders in a collective inquiry and decision-making. These open process allow interests and views to be shared.

[3] This information comes from Elin Torell's *Adaptation and Learning in Coastal Management: The Experience of Five East African Initiatives*, Coastal Management, 28: 353-63, 2000

Tanzania[4]

The coast of Tanzania houses twenty-five percent of the nation's population , seventy-five percent of the nation's industry, and claims the nation's largest city. It does all of this in only fifteen percent of the nation's land mass. Thus, an effective management plan is needed to keep Tanzania's coast productive and protected. As a result of the nation's unique coastal characteristics, it is concerned with "governance of costal areas." The nation's coastal waters house activities like fishing, shipping, tourism, trade, agriculture, and industrial development, along with newer activities such as coastal tourism, mariculture, and natural gas exploration. The nation needs a guide to balance development and conservation. Thus, Tanzania has produced a report, the result of the efforts of a fifteen person working group, that reviewed all available information in and outside of the country and spent five weeks visiting all coastal districts to assess problems and meet with local people. The goal of the working group was to create strategies for managing the nation's coastal area. After sixteen months of work, this paper resulted to outline what Tanzania needs in its coastal management plan. **Integration and coordination** are key elements necessary for the coast's survival.

Tanzania's management plan defines Integrated Coastal Management as "a continuous and dynamic process that unites government and the community, sciences and management, and sectoral and public interests in preparing and implementing an integrated plan for the protection and development of coastal ecosystems and resources." (GESAMP, 1991)

Like many other coastal areas, Tanzania faces problems with big industry, extraction activities, like sand and coral mining, salt production in coastal pens, loss of biodiversity, coastal agriculture, destruction and exploitation of coastal lands, and harmful fishing methods.

The nation's **current approach** to management is structured sectorally. There is no one policy that links sectors around issues or problems. The system is reactive, NOT proactive. **Tanzania wants their coastal resource decisions to be harmonized within the government.** The current approach has proved ineffective, as issues are dealt with individually and authority in limited. There are gaps and overlaps in authority and action. Therefore, the nation does not have a mechanism in place to ensure that coastal issues will be dealt with in the most appropriate and beneficial manner. The current management plan has facilitated conflicting uses of the nation's coastal resources. **Thus, the nation now has pledged allegiance to a coordinated and integrated system that unites those in power and those in coastal communities.**

Currently, Tanga serves as the nation's best established coastal zone conservation and development programme. The programme handles a great range of issues. **Villages have developed local initiatives in Tanga that address issues such as the introduction of by-laws into these areas, patrol to monitor destructive fishing practices and mangrove cutting, fishing gear restriction and replanting of mangroves.** Since the programme has been instituted there have been changes in the government's and villagers' attitudes and behaviors towards protecting coastal resources. However, there still are challenges in this region's program**. Among the problems identified are, a lack of effective coordination among sectoral agencies, too much dependence on directives from central government to solve local problems, confusion over the future role of the regional government, lack of timely support from the national government, unsatisfactory communication among districts to solve common problems, and long term financial sustainability.**

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[4] This analysis is based substantially on a publication of the Coastal Resources Center at the University of Rhode Island. *Options for a National Integrated Coastal Management Policy: Tanzania Coastal Management Partnership Support Unit*, Dar es Salaam, November 1999. The University of Rhode Island's Coastal Research Center and the U. S. Agency for International Development had involvement in this Tanzanian project.

The Tanga Programme developed in 1994 as a partnership among regional authorities, district governments of Tnaga, Pangani and Muheza, Irish Aid, and the World Conservation Union. The plan involved consultation with 150 institutions and over 300 people. The programme's approach to management involves "listening, piloting, demonstrating, and mainstreaming". **The focus is on local planning and action.** Priority issues are established through "rapid appraisal surveys" spearheaded by local officials. Next, the government and resource users designate the causes, impacts and possible solutions to the priority issues. Finally, committees are formed to address each of these priority issues (committees are composed of villagers and assisted by the government). The committee's action plans and management agreements contained objectives, possible actions, "indicators of success," responsibilities, controls, and penalties for not complying.

The costal management project has a 5 step cycle: issue identification, preparation of the plan, adoption and funding, implementation, and review and evaluation.

In most coastal areas villagers are poor and depend on coastal resources. Thus, there is a need to improve costal life and alternative livelihood opportunities for villagers whose activities come into conflict with Tanzania's coastal directives. Presently, villagers are involved in fishing, coastal forest and mangrove cutting, industry expansion, and extraction of coastal resources (including sand mining, quarrying, coral extraction). Thus, Tanzania sees the need to focus on the following issues: maintaining and enhancing coastal resources for local use, identifying and supporting new opportunities to supplement village incomes, reducing pressure on the resource base, developing mechanisms that encourage local stewardship and management of coastal resources.

Tanzania sees coastal planning as a tool to balance competing uses, to resolve conflicts among users, and to balance national and local interests. The nation also notes the need to guide development as it is happening, promote development in suitable areas and away from sensitive areas, as well as mitigate the impacts of existing activities. Tanzania does not desire to replace its agencies' sectoral responsibilities for reviewing and approving development. The nation desires to coordinate among sectors and fill in gaps that exist between them.

Within Tanzania, there are areas that require **proactive planning**, due to an area's economic or ecological value or because of intense user conflicts. For example, special management areas have been established for mangroves and coral reefs. Additionally, where there are national interests that trump local decisions, a consultation period will ensue until an "equitable balance" is reached among all the interests. Moreover, Tanzania's development will occur in a way that protects against environmental damage (areas of high biodiversity and importance will be protected by balancing development and conservation interests and directing economic developments to "suitable areas"). Scientific information is also very important to assist in readjusting policies as need is demonstrated. The overall plan for coastal management calls for gradual, bit by bit, enlargement as the available resource capacity allows.

Tanzania's analysis of international experience found that programs "must be selective about which issues to address and where and when to address them. Programs fail when they try to do too much at once or are spread too thinly. The scale, scope and complexity of coastal policy usually increases through the successive completion of policy cycles."

The overall ICM Policy goal in Tanzania "is the goal of the Tanzania ICM policy to preserve, protect and develop the resources of Tanzania's coast for use by the people of today and for succeeding generations to ensure food security and to support economic growth."

Tanzania's seven policy goals are as follows: **The first policy goal calls for the need to support local planning and management, while finding a balance between local and national interests.**" This is done by instituting **district level integrated coastal management action plans.** These plans are governed by national guidelines, however each district will focus on those issues that are important to them. The plans have to outline local goals and issues and how to approach each of these issues (this is done by using techniques

such as immediate voluntary actions, infrastructure, comprehensive planning, changes in by-laws, and so on). Like in the United States' Coastal Zone Management Act, districts do not have to prepare a plan, but there are **incentives** for preparing a plan. Additionally, the national government provides districts with assistance for instituting local plans. Moreover, since districts, wards, and villages can develop ICM plans, if the plans overlap the ICM committees for the areas in question have to coordinate their actions.

The second policy goal ensures that policies are developed according to national and local plans. This goal is achieved by reviewing plans in a mulit-sectoral and interdisciplinary manner. Coastal activity guidelines are developed by working groups to meet this goal. These guidelines address such issues as: mariculture, tourism, oil and gas exploration, fisheries, and industrialization. If coastal activities require permits from more than one agency, the agencies consult and coordinate approval.

The third policy goal requires conservation and restoration of biodiversity and habitats, while sustaining local livelihoods. Thus, areas in need of special protection are identified. After identification, these areas are placed into the existing sphere of protected areas mechanisms (marine parks and marine protected areas, being two examples).

The fourth policy goal requires specific management of areas where there is great economic interest or extreme hazards. Thus, special area management plans are developed for areas of particular concern. These areas are identified by user conflicts, resource degradation, new development, high risk for natural disasters, and extreme pollution. These special area management plans can span several if necessary (or include only a village). National guidelines will help structure these specific management plans.

The fifth policy requires a "simple" coastal ecosystem research, monitoring and assessment system. This system is headed by a science and technical working group. Thus, scientists are brought into the planning process. Scientists are used to identify areas in need of additional examination, identify useful indigenous knowledge, make conservation recommendations, and design a "simple" monitoring program.

The sixth policy calls for the formation of a system of interdisciplinary and inter-sectoral management. Three factors come into play here: **learning-by-doing (or from experience), information exchange between planners, and teaching coastal management as a curriculum.**

The seventh policy calls for the participation of those with interest in the planning process and implementation. Participation is encouraged through outreach programs and education opportunities illustrating the need for input in coastal management.

> The overall key necessities for successful coastal management require containment of the practice to the capacity needed, adaptive management (or learning from prior experiences), and an open process aimed at achieving favorable results.

(7) Belize[5]

The goal of Belize's coastal management program is "to support the allocation, sustainable use and planned development of Belize's coastal resources through increased knowledge and building of alliances, for the benefit of all Belizeans and the global community."

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[5] *The National Integrated Coastal Zone Management Strategy for Belize*; Belize Coastal Zone Management Authority & Institute, website www.cosatlzonebelize.org. Funded by the Global Environment Facility and United Nations Development Program, the European Union, and the Government.

This goal is to be achieved through enhancement of existing laws, regulations, polices and guidelines relating to conservation, resource management, and development control in the coastal zone. The coastal management program additional takes into account the need for coordination among other management plans, such as Coastal and Marine Protected Area, and the special requirements already in place, such development in the barrier reef regions.

The management approach **relies on integrated approach to development, planning and conserving**. The Belize Integrated Coastal Management plan is a hybrid of approaches traditionally used in marine and land-based planning, linking them with the support of scientific research. Belize requires both proactive planning measures and a response structure for problems that are later identified. Thus, Belize's plan is an evolving process environmental management. In order to succeed, collaboration is needed between government agencies, the private sectors, and the public.

Key activities for integrated coastal management in Belize include: review and revision of the coastal strategy, coastal research and monitoring, coastal area planning, marine pollution control, education, awareness, and communication, collaborative enforcement and monitoring, coastal advisory, among many other areas of focus.

Review and, if desired thereafter, revision takes place every four years. The review looks at successes, comprises lessons learned, and incorporates data and information from on-going scientific research and monitoring of coastal conditions.

Belize's main purpose of its strategy "is to facilitate improved management of coastal resources at a national level in Belize, to ensure economic growth is balanced with sound environmental management. The activities required to achieve this are contributing to Belize's regional commitments in biodiversity and natural resources management, including the Barrier Reef System that it shares with Mexico, Honduras and Guatemala."

Integrated Coastal Area Management in Belize balances conservation and development. Thus, decisions are made on a cross-sectoral, interdisciplinary scale. Moreover, if there is doubt about a decision a "precautionary principle" is followed; such a principle takes into consideration the knowledge, needs, and objectives of local communities, and related initiatives that manage the environment.

Recent, rapid development in many coastal activities, such as aquaculture, tourism, and residential growth, has emphasized the need for coastal management in Belize. While "sectoral planning and management are still essential," an integrated approach to management is unmistakably necessary. Additionally, because the coastal zone is a highly dynamic area, decisions made for one location can have significant impacts on the condition of the natural environment elsewhere. Thus, it is important for management plans to take an integrated approach.

Under Belize's Coastal Zone Management Act, a Chief Executive Officer of the Coastal Zone Management Authority creates a Coastal Zone Management Plan, which may take years. To combat this lengthy process, the plan is being segmented into phases.

Belize has determined under its coastal management that for sucess it must contain all of the following components: pro-active use of management techniques , response mechanisms for natural events, hindrance of inappropriate practices, informed decision- making process with the most recent , and use of a precautionary principle in decision-making. Additionally there must be overall consultation, participation, and coordination for the program to succeed.

In Belize, "Implementing integrated management is much harder than planning for it. To do so requires a combination of skills, commitment and aspirations of the people involved. What is essential to the plan is knowledge and sustainable coastal resources use, supporting planned development, building alliances to benefit Belizeans."

Under the program individual plans are formed for the following topics: coastal research and monitoring, Coastal Marine Protected Areas, mangrove protection, coastal habitat restoration, coastal wildlife conservation, fisheries, and aquaculture.

Another important policy goal for the program is to use a cross-sectoral approach in coastal area planning and development. Additionally, the program's objectives includes a policy that can best be described as: **"think nationally, act locally."** Belize's aim under this policy is for sound stewardship of coastal area resources. Educational awareness programs are also a key component of Belize's program.

(8) Some Additional Countries of Note

Mexico

Canada

European Union

Sweden

Shetland Islands

United Kingdom

Philippines